Troubling Trends Persist: Shortchanging America's Next Generation

National Commission to Prevent Infant Mortality

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A Report of the
National Commission to Prevent Infant Mortality
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Governor Lawton Chiles (FL), Chairman

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Introduction

Our nation's mothers and children are in trouble. The signs warning of this have been clearly visible for some time now, but we have not taken them seriously enough. As a result, we now find ourselves behind 21 other nations in the number of infants who die in their first year of life,[68] ranking 31st in the number born low birthweight, standing at number 20 in the number of children who die before their fifth birthday, and comparing very poorly in the percentage of our children immunized by the age of two.[28]

At the same time, paradoxically, we spend more money per capita and a larger percentage of our Gross National Product on health care than other nations. The health care industry is one of the fastest growing segments of the United States economy. Yet, we do not even guarantee all of our citizens access to the basic health services they need.

What is wrong? Much attention has gone into the development and application of technology which allows us to save the lives of infants born prematurely and at very low birthweights who would previously have died. Tragically, despite our extensive knowledge about the benefits of prevention, we still do not assure all children an equal opportunity to be healthy, causing many to die or depend on expensive medical and social services throughout their lifetimes.

Our health care delivery and welfare systems, which never have adequately met the needs of the poor and at-risk populations, are being stretched beyond their capacities by the increasing number of families who have fallen into poverty and need the support of public programs. Severe budgetary shortfalls at the federal, state, and local levels of government are making it even more difficult to meet the needs of the growing numbers of high-risk pregnant women who would otherwise get lost and fall through the cracks in the system, the increasing number of children living in poverty, the escalating number of newborns who have been exposed to drugs and alcohol in utero, and the new epidemics in vaccine preventable diseases.

Despite these challenging times, we cannot stand by and wring our hands while our next generation falls further behind. We have the knowledge and resources to take on the challenges facing us in our communities and over-burdened public programs. Children must be given the chance to reach their full potential. They depend on us, and we must respond.

This report is an update of *Troubling Trends: The Health of America's Next Generation*, a 1990 publication of the National Commission to Prevent Infant Mortality, which documented emerging trends in the status of maternal and child health. This report includes more recent data on the trends discussed, as well as an examination of new trends which have surfaced in the interim. It also looks at our progress toward the year 2000 health objectives for the nation established by the United States Public Health Service for maternal and child health. Based on our current status and rates of progress, it is evident that we will have to greatly increase our efforts if we are to attain these goals.

Overview: The Trends

Reductions in Infant Mortality Continue to be Minimal

In 1965 the United States' infant mortality rate began to rapidly decline. This trend continued until the 1980s, when the rate of progress greatly slowed.[62] Although our infant mortality rate is still slowly improving, we are not keeping pace with improvements in other countries. In 1989 the United States, with an infant mortality rate of 9.8/1,000 live births,[58] ranked behind 21 other nations in the number of babies who died in their first year of life.

In the United States, rates of infant mortality vary widely among racial, ethnic and socioeconomic groups. Rates for African Americans and the poor are much worse than our national average, ranking along with those found in Hungary, Bulgaria and Costa Rica.[28] Historically, there has been a large gap between the African American and white rates of infant mortality. This gap has not narrowed, and African American babies continue to die at more than twice the rate of whites. In 1989 the infant mortality rate among African Americans was 17.7, while the rate for whites was 8.2.[58,62]

It is often thought that our infant mortality problem is only an inner city problem. However, this is not true. The rates and causes of infant mortality in rural areas of the country mirror those found in metropolitan areas.[48,62]

The year 2000 national health objectives for infant mortality are 7/1,000 live births for all racial and ethnic groups combined, 11/1,000 for African Americans, 8.5/1,000 for American Indians, and 8/1,000 for Puerto Ricans.[95] At our current rate of progress, we have a long way to go before reaching these goals. It is unlikely they will be attained by the year 2000. (See recommendations on page 6.)

The Percentage of Infants Born Low Birthweight Has Grown

Low birthweight is closely associated with infant mortality and morbidity. Infants born low birthweight are 40 times more likely to die in their first month of life than other babies.[35] While low birthweight infants total 7 percent of all births, 60 percent of all infants who die are born low birthweight.[16] Those who survive are two to three times more likely to suffer from short and long term disabilities such as respiratory problems, hearing problems and learning disabilities.[35]

Much of low birthweight is preventable through early and regular, comprehensive prenatal care.[10, 35, 36] However, as this report will explain, rates of early prenatal care are not improving.

The percentage of babies born low birthweight (less than 2,500 grams or 5.5 pounds) showed no improvement during the last decade.[61] In fact, while there were small fluctuations during the 1980s, the 1989 rate of 7 percent was the highest since 1978. The percentage of very low birthweight births (less than 1,500 grams or 3.5 pounds) also increased during this period to 1.3 percent of all births. The percentage of infants born low birthweight varies between different ethnic and racial groups.[59]

The year 2000 national health objectives for low birthweight for all racial/ethnic groups combined is 5 percent, and for very low birthweight, 1 percent. The targets for African Americans are 9 percent for low birthweight and 2 percent for very low birthweight.[95] Not only are we not likely to reach these goals, current trends are going in the wrong direction. (See recommendations on page 13.)

The Number of High-Risk Pregnant Women and Children Has Increased

Families Living in Poverty

Families in poverty are at increased risk for many health and social problems. Approximately 25 percent of the 4 million babies born each year are born into families with incomes below the federal poverty level,[101] $11,570 for a family of three in 1992.[51] Overall, in 1990, the number of children below age 18 who lived in poverty reached an all time high of 12 million, representing approximately one in five. This rate is much higher than for other industrialized nations. If the current rate of increase continues, one in four will be living in poverty by the year 2000.[56]

This growing number of poor children and families is increasing pressure on our health and social welfare systems. These mothers are least likely to receive needed prenatal care and their children are least likely to receive the preventive health services they need, including immunizations. This is particularly troublesome as they are also more susceptible to complications from pregnancy and delivery, are more likely to have inadequate nutrition, and often live in environmental conditions which contribute to their vulnerability to illness.[43]

At the same time that a growing population is in need, local, state and federal governments are experiencing severe budget shortfalls. In the face of such limited revenues, government must make difficult decisions about which basic services to subsidize and which people to help.

The Use of Alcohol, Tobacco, and Other Drugs

According to one recent estimate, nearly 20 percent, or 739,200 pregnant women annually use one or more illegal substances at some point during their pregnancies.[26] This is a dramatic increase over the mid-1980s and is a problem which cuts across racial and socioeconomic lines.[93]

Infants who have been exposed to drugs or alcohol in utero or whose mothers smoked during pregnancy are at increased risk of prematurity, low birthweight, developmental delays and learning disabilities.[35,72] Fetal Alcohol Syndrome (FAS) can result from heavy maternal alcohol consumption.[a] Children with FAS have facial deformities, experience developmental delays and are often mentally retarded.[89]

Contributing to these problems is the severe shortage of drug and alcohol treatment programs which will accept pregnant women and women with children. It is estimated that in 1990, less than 14 percent of all pregnant women in need were able to get treatment.[92]

The national health objective for the year 2000 for the incidence of Fetal Alcohol Syndrome is 0.12/1,000 live births, from a 1987 rate of 0.22/1,000. The objective for abstinence from tobacco use during pregnancy is 90 percent. The objectives for abstinence from alcohol, cocaine, and marijuana are 20 percent increases over the current rates. Given the shortage of treatment programs we are not likely to reach these goals.[95,b] (See recommendations on page 25.)

Sexually Transmitted Diseases and AIDS

The incidence of AIDS and other sexually transmitted diseases among pregnant women and women of childbearing age greatly increased during the 1980s.[13, 14, 20, 93] Syphilis and other sexually transmitted infections, such as Gonorrhea, Chlamydia and herpes, contribute to low birthweight and other health problems of infants. Forty percent of newborns who contract syphilis from their mothers die.[95] This growing trend is strongly associated with the increased use of illegal drugs among men and women of childbearing age. AIDS is transmitted between intravenous drug users through the sharing of needles and sexual contact.[93] It is estimated that in 1989, 1.5 women out of every 1,000 giving birth were infected with HIV (the virus which causes AIDS).[29] It is also estimated that approximately 30 percent of infants exposed to HIV in utero will actually develop AIDS by 18 months of age.[85]

The year 2000 national health objective for congenital syphilis (syphilis contracted from the mother) is 50 cases per 100,000 live births from a baseline of 100 per 100,000 in 1989.[95] Unless efforts in prevention and treatment are greatly increased, we are not likely to reach this goal. (See recommendations on page 26.)

Births to Adolescents

While adolescent pregnancy and parenthood and births to unmarried women are not new phenomena, their magnitude and circumstances have changed over the years. The rate of adolescent pregnancy declined from the mid-1950s through the mid-1970s, then leveled off and actually rose in the late 1980s.[61] The 517,989 babies born to teenage mothers in 1989 represented 12.8 percent of all births in the United States. Approximately two-thirds of these teens were not married.[59]

Births to unmarried women of all ages have steadily increased since the mid-1970s. Both adolescent and unwed motherhood are clearly tied to poverty and, thus, the concomitant risks to good health associated with poverty. (See recommendations on page 26.)

Inadequate Weight Gain During Pregnancy

Inadequate weight gain during pregnancy is an important risk factor for low birthweight. However, the incidence of low birthweight declines sharply as weight gain increases. Approximately one-third of pregnant women do not gain adequate weight.[95] Teens and African American women are at particularly high risk for both inadequate weight gain and delivery of a low birthweight baby.[36]

The national objective for the year 2000 for the proportion of mothers who achieve the minimum recommended weight gain during pregnancy is 85 percent, a big increase over the 1980 baseline of 67 percent.[95] Considerable efforts will be necessary to reach all women with this information and, especially, to assist these who are at highest risk. (See recommendation on page 26.)

Fewer Women Are Receiving Early Prenatal Care

Comprehensive prenatal care, starting early in pregnancy, is the best method available for preventing the avoidable causes of infant mortality. A 1989 White House task force on infant mortality estimated that as many as 25 percent of all infant deaths could be prevented if mothers received adequate prenatal care.[101] For prenatal care to be as effective as possible it must be comprehensive and include screening and treatment for risk factors associated with complications and poor pregnancy outcomes.[96]

Tremendous barriers stand between women and the prenatal care they need. The barrier considered by many to be the most significant is finances.[10,70] In recent years, Congress greatly expanded eligibility for Medicaid to cover many additional low-income pregnant women, infants and children.[70] In response, states have worked hard to enroll hundreds of thousands of pregnant women and children and to provide services to them.[64, 94]

Yet, nearly 10 million children and 8.5 million women of childbearing age remain uninsured.[23] In addition, a significant number of women with

private insurance have policies which do not include coverage for maternity care and delivery.[24]

The inability to pay is not the only barrier women and children face. Other obstacles include an inadequate and/or inappropriate supply and distribution of primary health care providers and services, poorly coordinated and disorganized systems of referral between service providers, a lack of transportation, inconvenient appointment times, red tape, inhospitable clinic conditions and cultural factors.[2, 9, 10, 11, 21, 83, 84, 86, 87]

Despite the numerous reports and studies, these and other barriers continue to plague women, as evidenced by the declining rate of early prenatal care. In 1989, only 75.5 percent of all pregnant women received early prenatal care,[c, 59] compared to 76.3 percent in 1980.[61] This contrasts to the year 2000 objective of 90 percent for women of all races and ethnic groups who should receive early prenatal care.[95] If the current trend continues we will not reach our goal; it is going in the wrong direction. (See recommendations on page 32.)

Epidemics of Preventable Childhood Diseases Have Reappeared

In recent years, the United States has experienced an epidemic in preventable childhood diseases, especially measles, mumps, rubella and pertussis (whooping cough). In 1990 the epidemics intensified with more than 25,000 cases of measles and over 60 deaths reported.[65]

This tragedy illustrates our failure to reach children through our health care and social service delivery systems. A sizeable percentage of children do not see a primary health care provider for routine preventive care. In addition, we are doing a poor job of locating children in need and making sure they receive appropriate services.

All children need and deserve high quality primary health care. This epidemic indicates that we have a lot of work to do if we are to reach the year 2000 objectives of 90 percent of babies aged 18 months and younger receiving recommended primary care services at appropriate intervals, and 90 percent of children under age two receiving basic immunizations. The 1989 baseline for both was 70-80 percent.[95] (See recommendations on page 36.)

Table 1 – National Health Objectives for the Year 2000[a] – Compared to Health Indicators and Likelihood of Reaching Goal, Given Current Trends

Subject	Goal	Current Rate	Likelihood of Reaching Goal by Year 2000
Infant mortality			
All races	7/1,000	9.8/1,000[58]	Increased efforts needed
African American	11/1,000	17.7/1,000[58]	Increased efforts needed
American Indians/Alaska Natives	8.5/1,000	13.9/1,000[58]	Increased efforts needed
Puerto Ricans (b)	8/1,000	11.2/1,000[58]	Increased efforts needed
Low birthweight/very low birthweight			
All races	5% / 1%	7.0% / 1.3%[59]	Unlikely (c)
African Americans (b)	9% / 2%	13.2% / 2.9%[59]	Unlikely (c)
Fetal Alcohol Syndrome	0.12/1,000 live births	0.22/1,000 (d)	Increased efforts needed
Abstinence from alcohol and cocaine during pregnancy	Improve by 20%	(e)	Unlikely (c)
Abstinence from tobacco during pregnancy	90%	75%	Increased efforts needed
Congenital syphilis	50/100,000 live births	100/100,000	Unlikely (c)
Adequate weight gain during pregnancy	85%	67% (f)	n/a (g)
Early prenatal care			
All races	90%	75.5%[59]	Unlikely (c)
African Americans(b)	90%	59.9%[59]	Unlikely (c)
Immunizations	90% by age 2	70%-80%	Increased efforts needed
Primary pediatric services	90% of babies aged 18 months and younger	(h)	Increased efforts needed

a. Source: U.S. Department of Health and Human Services, Public Health Service, *Healthy People 2000, National Health Promotion and Disease Prevention Objectives*, 1990

b. Separate goals have not been established for other racial or ethnic groups.

c. Current trend is in the wrong direction; indicators are worsening instead of improving.

d. 1987 baseline

e. Baseline data is forthcoming.

f. 1980 Baseline

g. Insufficient data to determine likelihood of attaining goal

h. Baseline data will be available in late 1992.

Chapter One

Reductions in Infant Mortality Continue to be Minimal

In Brief ....

- In 1989 the United States' rate of infant mortality was 9.8 per 1,000 live births for all races and ethnic groups combined.
- In 1989 the African American infant mortality rate was 17.7, while the rate for whites was 8.2.
- As many as 25 percent of infant deaths could be prevented if the mothers received adequate prenatal care.
- Low birthweight is a leading and the most preventable cause of infant mortality.[24, 35, 36, 42, 58]
- Much of the reduction in infant mortality to date has been due to advances in biomedical technology which have saved the lives of infants who previously would not have survived. If we are to attain further reductions we must focus on prevention.[35, 40]
- Contrary to popular belief, infant mortality is not only an inner city problem. In 1988 more than 8,000 babies living in non-metropolitan areas across the United States died before their first birthday - a rate of 9.8.[48] The national rate in that year was 10.0.[62]
- Infant mortality rates vary dramatically across the states, from a low of 6.9 in Vermont to a high of 12.8 in South Carolina in 1989.[48]

The Problem

Infant mortality is an important indicator of the basic health status of a nation's children and the functioning of its health care delivery system and related services. While the United States' rate of infant mortality has steadily declined over the years, beginning in the early 1980s our rate of decrease slowed dramatically and did not keep pace with the reductions in other countries. Of the 4,040,958 infants born in the United States in 1989, 39,655 died within their first year of life.[58, 59] This infant mortality rate of 9.8 per 1,000 live births was a small decrease from 1988, but still placed us behind 21 other nations. (See Table 1.3, on page 8.)

A large part of the reason for our slowed progress is that we have made no improvements in prevention; i.e., reducing the incidence of low birthweight, and improving the utilization of prenatal care.

The leading causes of infant mortality are low birthweight and disorders relating to short gestation, congenital anomalies (birth defects), and Sudden Infant Death Syndrome (SIDS).[58] The causes of congenital anomalies are complex, and in many cases, not completely understood. For example, the role of environmental factors, such a toxic wastes and unhealthy work environments, have not been clearly established. Risk factors for SIDS include maternal smoking and drug use, births to teens, and infections late in pregnancy.[95, 98] Although we need to learn more about the causes of congenital anomalies and SIDS, several of the risk factors are known and many are preventable. We have even more knowledge about how to prevent most low birthweight births. This report focuses on these and other preventable causes of infant mortality.

Approximately two-thirds of all infant deaths occur during the neonatal period, which is less than 28 days of life.[58] Deaths during the neonatal period are primarily associated with low birthweight; congenital anomalies; respiratory distress syndrome; prematurity; problems which develop during pregnancy and birth; health problems experienced by the mother; and other causes which include poor maternal nutrition, smoking and the use of alcohol and other drugs.[58, 60] Many of these problems are preventable.

In 1989, the mortality rate for infants between 28 days and one year of age, the postneonatal period, was 3.6/1,000 live births. This represents one-third of all infant deaths.[58] The majority of deaths during this period are associated with environmental conditions in which infants live, poverty, a lack of access to pediatric care, injuries, infections, and inadequate nutrition. Children born low birthweight are particularly vulnerable to these risk factors. These causes also are largely preventable.[45, 55, 95, 101]

The proportion of infant deaths in the postneonatal period has steadily increased in recent years. The reasons for this include our ability to prolong the lives of many infants who in the past would have died earlier during the neonatal period, the increased number of children living in poverty, and the deteriorated conditions under which many of them live.[33,57]

With the knowledge and resources we have in this country, it is unacceptable that so many babies needlessly die.

Infant Mortality Among Minority Populations

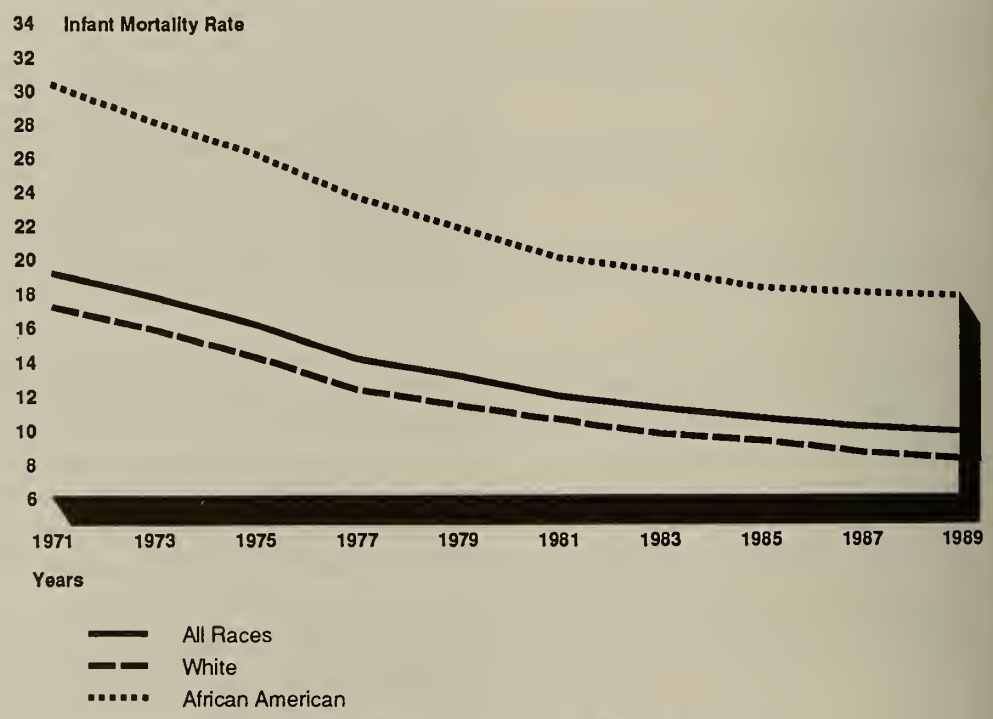
African Americans

Among African Americans the rate of infant mortality is far worse than the national average and ranks along with those found in less developed countries such as Hungary, Bulgaria and Poland. In 1989, the African American infant mortality rate was 17.7, compared to 8.2 for whites.

Historically, there has been a wide gap between the African American and white rates of infant mortality, and African American babies continue to die at more than twice the rate for whites. (See Figure 1.1) Research has shown that the higher rate of infant mortality among African American infants is the result of both their higher rate of low birthweight and poorer rate of survival at all birthweights.[7, 39] The generally lower socioeconomic status of African Americans is also a significant factor.[45]

The three leading causes of death among African American infants are disorders relating to short gestation and low birthweight, Sudden Infant Death Syndrome (SIDS) and congenital anomalies.[58] Many of the problems leading to these are preventable.

Figure 1.1 – Infant Mortality Rates, by Race, 1971–1989



Source: National Center for Health Statistics, *Monthly Vital Statistics Report*, "Final Mortality Data for 1989," Vol. 40, No. 8(S)2, January 7, 1992

Hispanics

Infant mortality rates among Hispanics, the second largest minority group in the United States, reveals a different picture than that of African Americans and is quite varied among the different sub-groups. (See Table 1.1.)

While Cubans and Mexican Americans have rates lower than either the national average or the rate for whites, the rate for Puerto Ricans is higher. Several theories to explain these variations have been put forward. The lower percentages of low birthweight and rates of infant mortality among infants whose mothers were born outside the United States, such as recent Latin American immigrants, suggests that their degree of acculturation to the American lifestyle may be important. Factors such as their better dietary habits, lower rates of smoking, use of alcohol and other drugs, higher value placed on parenthood, and stronger family support systems are viewed as playing key roles.[6, 22, 60, 83] Evidence also suggests that both births and infant deaths may be under-reported among Mexican Americans who have higher rates of out-of-hospital births than other racial or ethnic groups.[6] Socioeconomic status is another factor, as Cubans, the highest income sub-group, have the lowest infant mortality rate. The reverse is true for Puerto Ricans.

Table 1.1 – Infant Mortality Among Hispanics, 1983–86

Sub-group	Rate
Cuban	7.2
Mexican American	7.9
Other groups	8.2
(Non-Hispanic White)[f]	**8.0**
Puerto Rican	11.2

Source: Division of Analysis, National Center for Health Statistics, 1992

American Indians and Alaska Natives

For American Indians and Alaska Natives the 1983-85 averaged infant mortality rate was 13.9. This was 1.5 times higher than the rate for whites during this period.[60] Most of the excess infant mortality among Native Americans occurs during the postneonatal period.[55] In fact, this group has the highest rate of postneonatal mortality of any racial or ethnic group. Lower socioeconomic status and the risks associated with poor living conditions contribute to this.[33, 39, 55] If postneonatal mortality among these populations were reduced to that of non-Hispanic whites[c] (not including deaths from congenital anomalies), their overall infant mortality rate would decrease by 25 percent.[39]

The reasons for their excess neonatal deaths are more complex and appear to be somewhat contradictory. Native American women are much less likely to smoke during pregnancy[22] and their rate of low birthweight is only slightly higher than that of whites.[60, 61] However, as a group they have a very high rate of alcohol consumption during pregnancy,[55] their socioeconomic status is lower than that of whites, and they are less likely to receive early and regular prenatal care.[39, 55, 61]

Asian Americans

Infant mortality rates among the Asian American sub-groups are also quite varied. (See Table 1.2.) However, on average, their rate is lower than the national rate. Some of the factors which contribute to this include lower rates of smoking and use of alcohol and other drugs during pregnancy.[22, 60] In addition, Asian Americans who are recent immigrants to this country are less assimilated to the American lifestyle and dietary habits.

Table 1.2 – Infant Mortality Among Asian Americans, 1989

Sub-group	Rate
Chinese	6.1
Filipino	6.8
Japanese American	6.9
Other Asian Groups	8.2
(National average)	**9.8**
Hawaiian	11.8

Source: National Center for Health Statistics, "Advance Report of Final Mortality Statistics, 1989"

Infant Mortality in Rural Areas

In 1988, the most recent data available, more than 8,000 babies living in non-metropolitan areas across the United States died before their first birthday. This rate of 9.8 per 1,000 live births, represented 21 percent of the nation's total infant deaths that year.[48] The infant mortality rate in rural areas varies widely with average rates as high as 16.7 for some rural counties of Florida and Missouri and as low as 6.5 in rural areas of Hawaii.[48, 62]

Contrary to what is often believed, the rates and causes of infant mortality in rural areas are similar to those found in metropolitan areas.[48] However, a number of factors which impede access to care and contribute to infant mortality are more severe in rural areas:

- Rural residents are less likely to have health insurance coverage than people living in metropolitan areas. In 1991, 4.8 million rural families with children, that is 16.6 percent of all rural families with children, had no health insurance. This compares to 14.0 percent of urban families with

children. The percentage of families with children on Medicaid is similar in rural and urban areas, about 14 percent.

- Rural areas have greater shortages of health care facilities and providers than metropolitan areas. In areas where this is especially acute, rates of infant mortality are similar to those found in inner cities. In 1988, 111 counties throughout the United States did not have even one physician.[9] About two-thirds of all non-metropolitan counties have no obstetrician.[48]

The national health objectives established by the United States Public Health Service for the year 2000 target an infant mortality rate of 7 overall, 11 for African Americans, 8.5 for American Indians and Alaska Natives, and 8 for Puerto Ricans. Given our current slow pace of improvement, these targets will not be reached.

Recommendations

1. Pregnant women and children must be guaranteed universal access to comprehensive, primary health services.

2. Although Congress and the states have expanded Medicaid coverage and have increased spending for maternal and child health programs, additional efforts to develop and implement universal access to health services for pregnant women and children must be made at all levels.

3. Public awareness, outreach and case finding for high-risk populations, especially sexually active and pregnant teenagers and pregnant women who are addicted to alcohol and other drugs, must be expanded.

4. Health and social services must be better coordinated through a variety of one-stop shopping strategies. Referrals and collaboration between different agencies must become commonplace. Where it has not already occurred, application processes must be simplified and expedited. Pregnant women and children must be able to enter the health or welfare systems at any point - be it a physician's office, public clinic, or other location - have their needs assessed, and obtain referral for appropriate services.

5. Home visiting services for pregnant women and their young children must be expanded. Home visitors act as a link to community services and are key to assuring that women receive needed prenatal services and assistance postpartum (after delivery), that children receive appropriate preventive health services and that families at risk receive the support and early interventions they need. Federal and state governments can provide the funds to establish home visiting programs and reimbursement for these services. The private and non-profit sectors can establish programs and train home visitors to work in their communities.

6. In order to further improve infant mortality reduction efforts, infant death reviews should be conducted in communities and the findings translated into better service delivery and other initiatives as indicated.

Table 1.3 – Infant Mortality Rates, Ranking of the Developed Countries, 1989 (a)

Rank	Country	Infant Mortality Rate (b)
1	Japan	4.59
2	Sweden	5.77
3	Finland	6.03
4	Singapore	6.61
5	Netherlands	6.78
6	Canada	7.20(c)
7	Switzerland	7.34
8	France	7.36
9	Hong Kong	7.43
10	Federal Republic of Germany	7.44
11	Ireland	7.55
12	German Democratic Republic	7.56
13	Norway	7.72
14	Australia	7.99
15	Spain	8.07(c)
16	Austria	8.31
17	United Kingdom	8.42
18	Denmark	8.45
19	Belgium	8.64
20	Italy	8.80
21	Greece	9.77
22	**United States**	**9.80**
23	Israel	9.94
24	New Zealand	10.19

Source: Office of International Statistics,National Center for Health Statistics

(a) Singapore and Hong Kong, not defined as "developed" by the U.N., are included since they have infant mortality rates below the U.S.

(b) Number of infant deaths per 1,000 live births

(c) Rate for 1988

Chapter Two

The Percentage of Infants Born Low Birthweight Has Grown

In Brief ....

- In 1989, 284,391 infants, 7 percent of all newborns, were born low birthweight. This was the highest percentage since 1978 and placed the United States behind 30 other nations.

- Infants born low birthweight (below 2,500 grams or 5.5 pounds) are 40 times more likely to die in their first month of life than other babies. While 7 percent of newborns are low birthweight, 60 percent of infant deaths occur among infants who are born low birthweight. Those who survive are two to three times more likely to suffer from short and long term disabilities such as respiratory problems, hearing deficiencies and learning disabilities.

- The causes of low birthweight are largely preventable and could be effectively addressed through comprehensive prenatal care and appropriate social services.

- In 1989, 13.2 percent of African American babies were born low birthweight and 2.9 percent very low birthweight (less than 3.5 pounds). This is double the percentage of low birthweight and almost four times the percentage of very low birthweight for white babies.[59]

- In 1990 the hospital-related costs of caring for all low birthweight infants during the neonatal period totalled more than $2 billion, more than $21,000 per child born weighing less than 2,500 grams.[74] In comparison, the hospital-related costs for normal delivery averaged $2,842 per child. The costs associated with low birthweight infants, who make up 7 percent of all births, represented approximately 57 percent of the costs incurred for all newborns.[52]

The Problem

The percentage of infants born low birthweight is an indicator of the effectiveness of the health care delivery and related service systems in identifying women at risk and assuring that they receive adequate prenatal care and other needed services such as food through the Special Supplemental Food Program for Women, Infants and Children (WIC), treatment for alcohol or other drug use, and education on healthful behaviors. Risk factors for low birthweight include poor maternal nutrition, teenage pregnancy, the use of alcohol and other drugs, premature birth, smoking, and the presence of sexually transmitted diseases.[35, 95]

No progress was made in reducing the percentage of babies born low birthweight during the last decade. While there were small fluctuations during the 1980s, the 1989 percentage rose slightly to 7 percent, and was the highest since 1978.[61] The percentage of very low birthweight births (less than 1,500 grams or 3.5 pounds) also increased during this period to 1.3 percent of all births. As a result, in 1989, the United States ranked behind 30 other nations in the percentage of babies born low birthweight. (See Table 2.3 on page 14.)

In light of our decreasing rates of infant mortality, this trend is a clear indication that we are getting better at saving very small babies, rather than doing all we can to assure they are born healthy in the first place. The needless suffering of these babies and their families is largely preventable.

Low Birthweight Among Minority Populations

African Americans

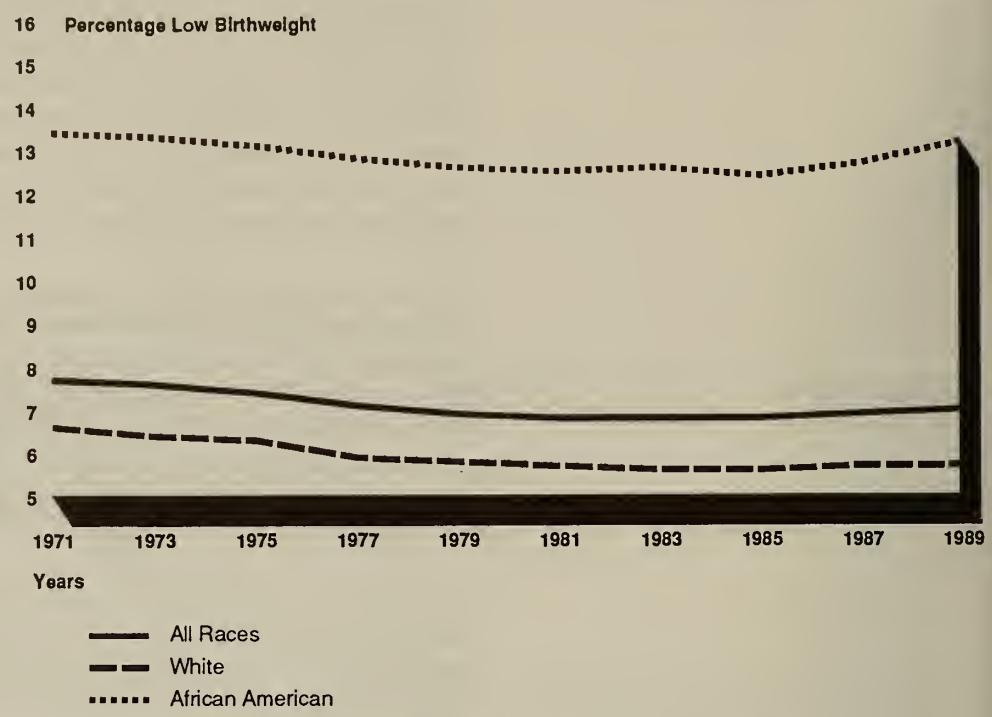
In 1989 13.2 percent of African American babies were born low birthweight and 2.9 percent very low birthweight. This is double the rate of moderate low birthweight (between 2,500 and 1,500 grams or 5.5 and 3.5 pounds) and almost four times the percentage of very low birthweight for white babies. (See Figure 2.1.)

These dramatically higher percentages of both moderate and very low birthweight and poorer survival rates at all birthweights underscore the need for early prenatal care to identify mothers and infants at greatest risk and to assure they receive the services they need. Not only are many African American low birthweight infants born into more vulnerable conditions, but those born at normal birthweights also have less chance of surviving. This highlights the need for strengthening efforts to assure that these babies receive preventive health services and that families receive the support services they need.

Hispanics and American Indians

In 1989 the percentages of low birthweight for the Hispanic sub-groups varied as shown in Table 2.1. These percentages are very similar to 1988, except for an increased percentage among Puerto Ricans. These rates also compare very favorably with the national average and the rate for whites. The reasons for these comparatively good rates are not completely understood in light of the higher infant mortality rates among these groups. On

Figure 2.1 – Low Birthweight by Race, 1971–1989



Source: National Center for Health Statistics, *Vital Statistics of the United States*

Table 2.1 – Rates of Low Birthweight Among Hispanics and American Indians, 1989

Sub-group	Rate
Puerto Rican	9.5%
(National Average)	**7.0%**
Other Hispanic Groups	6.7%
American Indians	6.3%
Central and South American	5.8%
(White)	**5.7%**
Cuban	5.6%

Source: National Center for Health Statistics, "Advance Report of Final Natality Statistics,1989"

one hand, cultural factors such as better diets and lower rates of smoking, alcohol and other drug use among Hispanics contribute to higher birthweights. However, these effects are at least partially countered by the relatively poor socioeconomic status and living conditions of all the Hispanic groups, except Cubans, and their lower rates of early prenatal care utilization.

The 1989 percentage for American Indians was slightly worse than the previous year. It also was worse than the 1989 rate for whites, but was better than the 1989 national average. Their higher rates of alcohol and other drug use, lower utilization of prenatal care, and poor socioeconomic status are contributing factors.

Asian Americans

Mirroring the national trend, the rates of low birthweight for Asian American sub-groups represented increases over 1988, as shown in Table 2.2. Contributing factors vary and are related to length of time lived in this country, health beliefs, and socioeconomic status. In general, Asian Americans smoke less and use less alcohol and other drugs during pregnancy.[22, 60] These behaviors are associated with higher birthweights. Some recent immigrants to the United States are less likely to use prenatal care, and others are more acculturated to the American lifestyle. These factors may contribute to their higher rates of low birthweight.

Table 2.2 – Rates of Low Birthweight Among Asian Americans, 1989

Sub-group	Rate
Filipino	7.3%
Hawaiian	7.3%
(National Average)	**7.0%**
Japanese	6.7%
Other Asian Groups	6.6%
(White)	**5.7%**
Chinese	5.0%

Source: National Center for Health Statistics, "Advance Report of Final Natality Statistics, 1989"

The Economic and Social Costs of Low Birthweight

The short and long-term economic costs of our high-tech approach to saving infants born in poor health, instead of preventing their health problems in the first place, are staggering. The emotional and human costs cannot be quantified. In 1990, the hospital-related costs of caring for all low birthweight newborns totalled more than $2 billion, over $21,000 per child born weighing less than 2,500 grams. In comparison, the hospital-related costs for a normal delivery averaged $2,842 per child. While low birthweight infants represent 7 percent of all births, expenditures for their care total approximately 57 percent of the costs incurred for all newborns.

The long-term costs of low birthweight are more difficult to ascertain but are obviously extremely high. Research has shown that children born low birthweight are more likely to have hearing, vision, or learning problems, among others, and many require special educational services. Recent findings indicate that 15.4 percent of schoolage children who were born very low birthweight and 4.7 percent of children born low birthweight required special education, compared to 4.3 percent of children born at normal birthweights.[66] In addition, one-third of the children who were born very low birthweight and 19.6 percent of children born low birthweight, compared to 13.5 percent of children born at normal birthweights, experienced school failure (grade repetition or assignment to special education classes).[50]

The national health objective for the year 2000 for low birthweight is 5 percent, and for very low birthweight 1 percent, for all races combined. For African Americans the goal for low birthweight is 9 percent and for very low birthweight, 2 percent. If current trends continue we will certainly not reach this goal; we are headed in the wrong direction.

Recommendations

1. No amount of high-tech medicine and machinery can replace a child's healthy development in the mother's womb. Therefore, our efforts must be redirected to assure that all women receive prenatal care and all women at risk of poor birth outcomes are identified early in pregnancy, and preferably before. They must be guaranteed universal access to care.

2. Strategies which assist them in accessing appropriate services must be developed and implemented. These include public awareness campaigns, case finding activities, and home visiting services. Referral systems for needed treatment and other support services must be better coordinated and strengthened.

3. Research has shown that early intervention can minimize the problems faced by children born low birthweight.[76] Therefore, low birthweight babies should be assessed for the risk of disabilities as early as possible and immediately receive appropriate interventions.

Table 2.3 – Percentage of Babies Born Low Birthweight, International Ranking, 1980–88

Rank	Country	Percent
1	Spain	1
2	Finland Ireland Norway Sweden	4
6	Belgium Egypt France Hong Kong Iran Japan Jordan (a) Kuwait (b) New Zealand Portugal Switzerland (a)	5
17	Australia Austria Bulgaria Canada Costa Rica Czechoslovakia Denmark Germany Greece Romania Saudi Arabia Singapore United Arab Emirates USSR	6
31	Albania Chile Israel Oman Paraguay Turkey United Kingdom **United States** Yugoslavia	7

Source: UNICEF, *The State of the World's Children 1992*

a. Rate for 1979

b. UNICEF estimate

Chapter Three

The Number of High-Risk Pregnant Women and Children Has Increased

In Brief ....

- Approximately 25 percent of the 4 million infants born each year are born into families with incomes below the federal poverty level, $11,570 for a family of three in 1992. Poor infants are at higher risk for all of the preventable factors which are associated with infant and childhood mortality and morbidity.[43]

- In 1990 the number of children below age 18 living in poverty reached an all time high of 12 million, representing approximately one in five children. This rate is much higher than for other industrialized nations. If the present rate of increase continues, one in four children will be living in poverty by the year 2000.

- Infants exposed to alcohol, tobacco and other drugs in utero are more likely to be born prematurely and low birthweight. A supportive nurturing home environment for these children and early intervention services are central to their development and may even enable them to overcome their drug exposure.[76]

- According to one recent estimate, as many as 739,200 pregnant women, nearly one in five, use one or more illegal substances at some point during their pregnancies each year. This is a dramatic increase over the mid-1980s and is a problem which cuts across socioeconomic lines.

- Potential fetal damage can be minimized if the mother stops drug use during pregnancy.[93] However, it is estimated that in 1990, less than 14 percent of all women in need were able to get treatment.

- Nationally, the additional medical expenses for infants who have been exposed to cocaine in utero total an estimated $504 million per year.[75]

- Heavy drinking during pregnancy interferes with the development of the infant's motor skills, causes attention deficit disorders and lower IQ scores. Because no safe level of alcohol use during pregnancy has been established, the United States Surgeon General has advised pregnant women to abstain from alcohol use altogether.

- The incidence of Fetal Alcohol Syndrome (FAS) is estimated to be 1 to 3 per 1,000 live births. Among some Native American groups, the rate is as high as 10/1,000. However, for every child born with FAS, ten more suffer from alcohol-related problems. Such effects can be seen in as many as two-thirds of infants born to women who drank heavily during pregnancy.[99]

- Smoking during pregnancy is closely associated with low birthweight, premature birth, an increase in the incidence of respiratory problems among infants and young children, and Sudden Infant Death Syndrome.[35, 42, 95]

- The children of women who smoke more than two packs of cigarettes per day during pregnancy are 1.4 to 2 times more likely to experience school failure by age 7.[50]

- The health costs during the first year of life associated with the additional low birthweight attributable to maternal smoking are significant. The estimated cumulative total, in 1986 dollars, is $1 billion to $1.5 billion.[47, 72]

- Comprehensive prenatal care should include smoking cessation efforts. If maternal smoking were eliminated, infant mortality could be reduced by 10 percent[35] and low birthweight by 25 percent.[41]

- The Centers for Disease Control estimates that between 10,000 and 20,000 children are infected with HIV.[85] Eighty-four percent of childhood AIDS is contracted from the mother.[14, 85] Between 1981 and 1989 more than half of the AIDS cases among women were attributable to intravenous drug use and over 27 percent to sexual contact.[14]

- In 1989, 517,989 babies were born to teenage mothers, representing nearly 13 percent of all United States births.[59] The rate of births to 15-19 year olds was 58.1 per 1,000 15-19 year olds, an 8 percent increase over 1988 and the highest rate seen in 16 years.[59, 61]

- Infants born to adolescent mothers and unmarried women have a greater chance of being born at low birthweight and/or dying in their first year of life[35] because these mothers are less likely to seek and use early and regular prenatal care,[59, 61] are more likely to be poor, and have less financial and emotional support.[1, 25, 30, 31, 57, 67, 77]

The Problem

During the 1980s this nation experienced a large increase in the number of families living in poverty, a surge in alcohol and other drug use among pregnant women and men and women of childbearing age, a sharp rise in the number of children, and men and women of childbearing age infected with sexually transmitted diseases and AIDS, and dramatic increases in the number of births to teenagers and unmarried women. All of these factors bode poorly for our ability to significantly reduce our infant mortality rate and improve the health of mothers, children, and families overall.

Families Living in Poverty

Poor families are among the most at risk for all of the preventable factors associated with infant and childhood mortality and morbidity. Their children are more likely to have been exposed to drugs in utero, to be poorly nourished, to experience illnesses and handicapping conditions, and to have generally poorer health status. They are also among the least likely to have a regular source of health care or to receive needed preventive health services such as immunizations. During the past decade the number of children living in poverty increased by 21 percent.[91] For children under 6 years of age the rate of increase was 28 percent, faster than for any other age group.[56] (See Figure 3.1.)

Figure 3.1 – Trends in Poverty, 1966–1989

Source: Bureau of the Census, *Current Population Reports*, Series P–60, No. 175 and National Center for Children in Poverty, *Five Million Children, A Statistical Profile of Our Poorest Young Citizens*,1990

Approximately, 25 percent of the 4 million infants born each year are born into families with incomes below the federal poverty level, $11,570 for a family of three in 1992. An additional 20 percent are born into families with incomes between 100 percent and 185 percent of poverty. In other words, 1,800,000 children born each year are poor or near-poor.[101]

In 1989 the number of children under age 18 living in poverty reached an all time high of more than 12 million[56]. If the current trend continues, one in four children will be living in poverty by the year 2000.

Children from minority groups make up a disproportionate share of poor children. While 31 percent of all children under 6 belonged to minority groups in 1989, they made up 59 percent of all poor children. Of the poor children under 6, 41 percent were non-Hispanic white[f], 34 percent non-Hispanic black[f], 21 percent Hispanic, and 4 percent members of other racial and ethnic groups. The rate of increase has been fastest among Hispanics, with approximately one in three Hispanic children living in poverty in 1989.[56]

The principle factor which has contributed to the increase in childhood poverty is a drop in employment and wages earned by those in their 20s. While more poor children live in female-headed families, the rate of poverty has increased fastest for children in families with two parents. Additionally, most poor children live in families where one or both parents are working.[80, 91] The impact of this trend on infant mortality, child health and, consequently, the public costs of caring for these children, will be great.

Although poverty is often seen as primarily an urban problem, a higher percentage of children in rural areas than metropolitan areas are poor.[91]

At the same time that this nation experienced a large increase in child poverty, it also experienced a 25 percent increase in its Gross National Product.[37] Clearly, the United States can afford to invest further in programs and strategies to protect the health of poor women and children. Additionally, we have the knowledge needed to assure that women receive timely prenatal care and that children receive preventive health care services, no matter what their income level.

The Use of Alcohol, Tobacco, and Other Drugs

Infants who have been exposed to drugs, alcohol or tobacco in utero are more likely to be born prematurely and low birthweight. These children are at increased risk of dying in their first year of life and/or suffering from long-term disabilities.

Illegal Drugs

Newborns who have been exposed to alcohol and illegal drugs in utero are typically irritable, easily upset, hard to calm and have difficulty bonding with their parents or other caretakers. As they grow older, many exhibit delays in motor and psychosocial development. It appears that the effects of prenatal drug exposure vary from child to child, depending upon the length and timing of their mothers' use.[103]

Potential damage to the fetus can be minimized if the mother stops using drugs during pregnancy. There is also growing recognition of the importance of early, aggressive, and consistent intervention with these children to ensure optimal growth and development.[34, 76, 103] Researchers are also finding that a stable and nurturing home environment is central in the development of drug-exposed infants and may even enable them to overcome their drug exposure.[34, 103]

Recent estimates place the number of women who use one or more illegal substances at some point during their pregnancy as high as 739,200 each year, or approximately one out of five pregnant women. This is a problem which cuts across socioeconomic and racial lines.

Economic Costs and Long-Term Effects

Substance-exposed newborns are likely to require longer hospital stays. Nationally, the additional medical costs for infants who have been exposed to cocaine alone total an estimated $504 million per year.

The number of "boarder babies" is growing rapidly. Many parents, feeling overwhelmed by the difficulties and lack of support for taking care of a substance-exposed newborn, and perhaps struggling with their own drug problem, are leaving them in the hospital, never returning to pick them up. Most of these babies end up in the foster care system. They are difficult to place for adoption, as their present and possible future emotional and physical problems seem daunting to prospective parents.

The long-term effects of prenatal drug exposure are only now surfacing as the first wave of these children enters school. Some exhibit learning and attention deficits, while others seem to have suffered no lasting effects.[34] It is not yet known whether the higher intellectual functions, such as abstract thinking, may have been affected. Nevertheless, any suffering or deficits they may face are preventable.

Barriers to Treatment

The severe shortage of treatment facilities which will accept either pregnant women or women with children significantly contributes to this problem. In 1990 less than 14 percent of all women in need were able to obtain treatment.

Those lucky enough to locate a treatment program which will accept them often are faced with an another barrier to care: difficulty in finding a way to pay. Private insurance companies are becoming more and more restrictive about the type and length of treatment they will cover, increasingly moving toward short-term outpatient treatment. Although legislation is pending in Congress to expand Medicaid coverage for residential treatment for pregnant women and women with children,[d] Medicaid now limits the length of treatment it will cover and the types of facilities in which it will allow women to receive treatment.[92] These restrictions pose substantial obstacles on women's roads to recovery. Many of them need long-term care that can best be provided in residential and/or community based outpatient

programs which provide job skills training, classes in parenting skills, support to help them cope in a new drug free environment, and care for their children while they are receiving treatment.

There is much public debate about the most effective way to deal with illegal drug use during pregnancy. A number of states have approached this problem by instituting punitive measures, including "protective" incarceration of women during pregnancy to keep them from using illegal drugs and supposedly, to assure they receive treatment; criminal prosecution of pregnant women who are found to be using illegal drugs; and testing the newborn's blood for drug exposure and then charging the mother with child abuse if the results are positive.[27]

However well-intentioned these measures may be, they frighten women and deter them from seeking prenatal care and treatment services.[49] Additionally, very few comprehensive treatment facilities are available to these women.

Anecdotal reports indicate that those "protectively" incarcerated do not receive either appropriate prenatal care or treatment.[17] Other reports by women who have been forced into treatment reveal that they do not receive needed follow-up services postpartum and, therefore, often begin to use drugs again.

The national health objective for the year 2000 for abstinence from cocaine during pregnancy is a 20 percent improvement over the current rate. Given the upward direction of the current trend, we are not likely to reach this goal.

Alcohol

There is a general consensus that alcohol use during pregnancy is harmful. Most researchers agree that drinking during pregnancy can interfere with the development of motor skills, cause attention deficit disorders, and lower IQ scores. These effects are not uniform and the amount of drinking which will lead to them is not well understood. No safe level of alcohol use during pregnancy has been established. It is, therefore, recommended that women abstain from alcohol use altogether during pregnancy.

Heavy or frequent alcohol use during pregnancy may result in Fetal Alcohol Syndrome (FAS), the leading preventable cause of birth defects and mental retardation. Children with FAS suffer growth deficiencies, facial malformations, and mental retardation. Some children who exhibit only one or two of these signs are considered to have Fetal Alcohol Effects (FAE).[100] The incidence of FAS is estimated to be one to three per 1,000 live births. Among some Native American groups the rate is as high as 10/1,000.[95] For every child born with FAS, it is estimated that ten more suffer from alcohol-related problems. Such effects can be seen in as many as two-thirds of infants born to women who drank heavily during pregnancy.[99]

The severe shortage of alcohol and drug treatment programs which will accept pregnant women and women with children is a serious obstacle to overcoming this preventable cause of infant morbidity. This is even more tragic, as these women are among those most in need of prenatal care, but among those least likely to obtain it.[49]

The national health objective for the incidence of Fetal Alcohol Syndrome by the year 2000 is 0.12/1,000 live births, from a 1987 rate of 0.22/1,000. The target for abstinence from alcohol during pregnancy is a 20 percent increase over the current rate. The current lack of treatment programs available to pregnant women and women with children is a major obstacle to meeting this goal.

Smoking

Smoking during pregnancy is associated with 20 percent to 30 percent of all low birthweight births[41] and is closely associated with premature birth, an increase in the incidence of respiratory problems among infants and young children, and Sudden Infant Death Syndrome. Studies have also found an association between maternal smoking and decreased body length and head circumference in newborns.[95] These conditions may be associated with later learning and developmental difficulties. One study found that, compared to children of women who did not smoke during pregnancy, the children of women who smoked more than two packs of cigarettes per day are 1.4 to 2 times more likely to experience school failure by age 7.[66] Recent research has also shown that these problems may be compounded by children's exposure to ambient smoke after birth.[73]

It is estimated that 25 percent of all pregnant women smoke throughout their pregnancies,[95] with differences between racial, ethnic and socioeconomic groups being found in both the incidence of smoking during pregnancy and its effects on the fetus.[22] Children living in families with lower incomes and whose mothers have lower levels of education are more likely to have been exposed to smoke prenatally and during childhood.[73]

Health care costs during the first year of life associated with the additional low birthweight attributable to maternal smoking are significant. The estimated cumulative total, in 1986 dollars, is $1 billion to $1.5 billion.

All prenatal care providers and programs should assist women to quit smoking. The United States Public Health Service estimates that if smoking were eliminated, infant deaths could be reduced by about 10 percent and low birthweight by 25 percent.

The year 2000 objectives call for 90 percent of pregnant women to abstain from tobacco use during pregnancy, from a baseline of 75 percent. Obviously, increased efforts will be needed to reach this goal.

Sexually Transmitted Diseases

Closely tied to the use of illegal drugs, especially crack, cocaine and heroine, are the greatly increased incidence of syphilis, other sexually transmitted diseases, and the transmission of HIV, the virus which causes AIDS. Practices such as paying for drugs with sex have contributed to the sharp increase in primary, secondary and congenital syphilis (syphilis among infants born to mothers with syphilis). Congenital syphilis causes fetal or perinatal[e] death in 40 percent of the infants affected.[95] It can also cause premature birth, low birthweight, mental retardation, and chronic health problems. Syphilis compounds the relationship between intravenous drug use and AIDS because the presence of genital ulcers, such as those associated with syphilis, have been found to greatly increase the transmission of HIV.[90] The presence of other sexually transmitted diseases also makes women more susceptible to HIV.

The Centers for Disease Control reported that cases of primary and secondary syphilis increased by 64 percent, from 27,131 in 1985, to 44,450 in 1989. The case definition of congenital syphilis was changed in 1989 to include all infants born to mothers with syphilis, instead of only those with clinical symptoms. As a result of both this and the upward trend, the number of infants born with congenital syphilis increased to 7,000 in 1990, for a rate of 174/100,000 live births.[20] This contrasts to the year 2000 health objective of 50 cases per 100,000 live births. Clearly, it will be a challenge to reach this goal.

AIDS

The nation is facing a growing AIDS epidemic. AIDS is the ninth leading cause of death among 1 to 4 year olds. If the current trend continues, it will rank among the top five in a few years.[85]

As of October 1991, there were 1,388 cases of AIDS among children below the age of 5, a 43 percent increase over March 1989.[14] It is estimated that approximately 1,800 newborns acquired the HIV virus during that year.[29] Approximately one-third of infants born to HIV-positive mothers will develop AIDS by 18 months of age.[85] Eighty-four percent of childhood AIDS cases are contracted from the mother.

Between 1981 and 1989 more than half of the AIDS cases among women were attributable to intravenous drug use and over 27 percent to sexual contact. Nationally, an estimated 1.5 per 1,000 women giving birth in 1989 were infected with HIV.

The incidence of AIDS varies between different racial and ethnic groups. To date, 53 percent of pediatric AIDS cases have been among non-Hispanic blacks,[f] 25 percent among Hispanics, 21 percent among non-Hispanic whites[f] and less than 1 percent among Asian Americans, American Indians and Alaska Natives.[14]

Births to Adolescents

Teens are at an increased risk of poor birth outcomes because they are more likely to deny they are pregnant and less likely to understand the importance of receiving early and regular prenatal care (see Table 4.3 on page 32), or to know how and where to obtain it. They also have increased nutritional needs and an increased probability of engaging in behaviors which may be harmful to the developing fetus, such as smoking, drinking alcohol, and eating foods with little nutritional value. These are problems which could be prevented or minimized with early and regular comprehensive prenatal care.

Both adolescent and unwed motherhood are closely tied to poverty. Infants born to teenage mothers are more likely to remain poor throughout childhood than infants born to mothers who waited until age 20 or more to have a child. The data also show that teenagers who have children are more likely to remain poor through their 20s. This is largely because these mothers have a higher probability of not completing high school or going on for further training.[57]

Table 3.1 – The Percentage of Births to Adolescents, by Race and Ethnic Group, 1989

Racial/Ethnic Group	Rate (Percent of births in group)
African American	23.5%
Puerto Rican	21.9%
American Indian	19.6%
Other Hispanic Groups	19.0%
Mexican American.	17.4%
Hawaiian	17.2%
(All Groups)	**12.8%**
White	10.8%
Central and South American	8.6%
Cuban	6.9%
Other Asian and Pacific Islanders	6.4%
Filipino	5.8%
Japanese	2.7%
Chinese	less than 1.0%

Source: National Center for Health Statistics, "Advance Report of Final Natality Statistics,1989"

While teen pregnancy and childbirth are not new phenomena, their magnitude and circumstances have changed during the last two decades. During the 1970s and most of the 1980s, the rate of births to teens decreased. However, in the late 1980s it began to increase. In 1989, there were 58.1 births per 1,000 teens, ages 13 to 19, totalling 12.8 percent of all births. This was the highest rate seen in 16 years.[59, 61]

The rates of teen birth vary between racial and ethnic groups. In 1989 the rate among blacks was 110.4, compared to 48.5 among whites. The percentage of births to adolescents also vary within the different racial and ethnic groups. (See Table 3.1.)

The percentages for all of these groups represent increases over their 1988 rates, except Chinese, Japanese and Filipinos, who experienced slight decreases.

Unmarried Adolescents

Infants born to adolescents and unmarried women have a greater chance of being born low birthweight and/or dying in their first year of life. Consequently, the risks for infants born to unmarried adolescents are greatly compounded. In 1989, one-third of births to unmarried women were to adolescents. However, conversely, approximately two-thirds of teens who gave birth were unmarried.

During the 1970s and 1980s, the rate of births to all unmarried teens 15-19 years old nearly doubled, from 22.4 per 1,000 in 1970 to 40.6 in 1989. This trend paralleled the increased rate of birth to unmarried women in other age groups. The rates increased among both whites and African Americans. However, the rate of increase was much faster for whites. Among white 15-19 year olds it almost tripled, from 10.9 in 1970 to 28.4 in 1989. During the same period the rate among African Americans increased much less, from 96.9 to 103.4.[61]

Inadequate Weight Gain During Pregnancy

Inadequate weight gain during pregnancy has been identified as an important risk factor for low birthweight. Both pre-pregnancy weight and the amount of weight gained during pregnancy affect birthweight. However, adequate weight gain during pregnancy lowers the risk, regardless of the woman's pre-pregnancy weight or her other risk factors; i.e., smoking during pregnancy. The average recommended weight gain during pregnancy for a woman who had a normal pre-pregnancy weight is 25-35 pounds.

African American and poor women and adolescents are at increased risk of not gaining an adequate amount of weight during pregnancy. For young teens the relationship is complicated by higher nutritional requirements associated with their rapid physical growth and development. Adolescents also are less likely to practice good nutritional habits. African Americans' generally lower socioeconomic status places them at greatest risk for inadequate weight gain.[36]

Although standards for nutritional risk assessment and counseling during prenatal care have been developed by the United States Public Health Service's Expert Panel on the Content of Prenatal Care and other organizations,[4] they are not routinely used by all health care providers.

One of the most important programs for low-income women at risk for pregnancy complications or delivering a low birthweight infant is the Special Supplemental Food Program for Women, Infants and Children (WIC). This program provides eligible pregnant women and children to age 5 with vouchers which can be exchanged for specific food items or the foods themselves. However, this program is not adequately funded. A recent study found that only about half of those eligible are enrolled.[12]

The national health objective for the year 2000 for weight gain during pregnancy states that the proportion of mothers who achieve the minimum recommended weight gain during pregnancy should increase to at least 85 percent from a baseline of 67 percent in 1980. Increases efforts will be needed if we are to attain this goal.

Recommendations

Reducing the Use of Alcohol and Other Drugs

1. Comprehensive drug and alcohol treatment programs oriented to the needs of women and which give priority to pregnant women and women with children must be greatly increased. This will require additional support from both the government and private sectors.

2. Because of the important role Medicaid has to play in funding treatment for low-income women, the type and length of treatment which qualifies for reimbursement should be expanded.[d]

3. Employers must play a central role by referring and supporting workers in need of treatment services.

4. Community service organizations, schools, churches, and other grassroots organizations should include anti-drug messages in all community outreach information, curricula, and teaching materials.

Reducing Smoking During Pregnancy

1. Screening for smoking and referral to smoking cessation programs should become a standard element of prenatal care.

2. Smoking cessation programs must be greatly expanded and priority given to pregnant women.

3. Public education/smoking prevention and cessation efforts must be greatly expanded, especially those aimed at teenage girls whose rates of smoking are increasing.

Reducing the Incidence of Sexually Transmitted Diseases and AIDS[g]

1. Because of the strong connections between the use of alcohol and other drugs, to the increased incidence of Sexually Transmitted Diseases and transmission of HIV, public and private support for the expansion of drug and alcohol treatment programs oriented to the needs of pregnant women and women with children must be greatly increased.

2. The federal government should establish a comprehensive national HIV prevention initiative oriented towards women of childbearing age. This initiative should include the participation of all relevant government agencies and provide flexible support for community-based efforts.

3. Programs must pay special attention to the needs of teenagers who tend to deny their risk and are often ignored. This includes recognition of the fact that the majority of teens become sexually active before the age of 17.

Reducing Births to Adolescents

1. Community-based programs should be developed to expand the life options available to high-risk adolescents. These programs can help to deter teens from becoming pregnant as well as provide support services for those who are. Such services may include assistance in completing their education and developing job skills.

2. Family life and sexuality education should be available to all children, beginning with pre-adolescents.

3. For those teens who choose to become sexually active, family planning services must be readily available.

4. The availability of family planning services to poor women should be increased through expanded Medicaid coverage and other special programs.

Improving Weight Gain During Pregnancy

1. Standards for screening for nutritional risk and education on nutrition and dietary habits should be adopted by all providers of prenatal care.

2. Funding for the Special Supplemental Food Program for Women, Infant and Children (WIC) should be increased so that all who are eligible are able to enroll.

3. Home visiting programs should be expanded and used to instruct pregnant women and new mothers about good nutritional habits.

Chapter Four

Fewer Women Are Receiving Early Prenatal Care

In Brief ....

- Comprehensive prenatal care should include education on healthful behaviors, proper nutrition, baby care and parenting skills; screening for the use of tobacco, alcohol or other drugs and potential congenital anomalies; identification of problems which may exist in the women's home; and referral to appropriate treatment and/or social services, in addition to medical services. Care should begin in the first trimester of pregnancy and, for a healthy mother, include 12-13 visits.[96]

- Over the last ten years, there has been no improvement in the percentage of women beginning prenatal care in the first trimester. In fact, the 1989 rate of 75.5 percent was worse than a decade earlier.[59, 61]

- Until the early 1980s, the percentage of women receiving late or no prenatal care slowly, but steadily, declined. However, the percentage actually increased to 6.5 percent in 1989. This was the highest rate since 1973 and represented a 27 percent increase over the decade.[59, 61]

- Despite recent expansions in eligibility for Medicaid, 8.5 million women of childbearing age and nearly 10 million children still neither qualify for Medicaid nor have private insurance coverage. In addition, a significant number of women with private insurance have policies which do not cover maternity and delivery costs.

- Tremendous nonfinancial barriers stand between many pregnant women and the care they need and deserve, including a lack of maternity care providers, a lack of transportation, and a fragmented service delivery system that can stymie even the most diligent woman seeking care.

The Problem

Early and regular comprehensive prenatal care is the best method available for identifying and avoiding the preventable causes of infant mortality, especially those which occur in the neonatal period.[35, 40, 101] Adequate prenatal care is considered to be care which begins in the first trimester of pregnancy (within the first three months) and includes at least 12-13 visits. This standard is for a normal pregnancy without complications and a mother who has no medical problems.

For prenatal care to be as effective as possible, it must be comprehensive. Care should involve more than a physical examination of the mother and developing fetus by a health care provider. As recommended by the United States Public Health Service's Expert Panel on the Content of Prenatal Care, comprehensive care should include education on healthful behaviors, proper nutrition, baby care and parenting skills; screening for the use of tobacco, alcohol or other drugs and potential congenital anomalies; identification of problems which may exist in the woman's home; and referral to appropriate treatment and/or support services.[96]

While national data do not exist on the content of prenatal care mothers receive, we do know that the comprehensiveness and appropriateness of care varies between types of providers; i.e., private physicians, certified nurse-midwives, public clinics and community health centers. Generally, because public clinics and community health centers target their services to poor and high-risk populations, they offer more comprehensive care than individual private providers.

Barriers to Care

A number of barriers have been identified which interfere with pregnant women and parents seeking and obtaining prenatal and preventive pediatric care. These include:

— Finances - an inadequate or total lack of health insurance covering maternity and preventive pediatric care;

— Lack of information regarding the importance of prenatal and preventive pediatric care and how or where to obtain services;

— An inadequate supply and maldistribution of health providers and services, including inconvenient appointment times and location, long waiting periods for appointments, and lack of transportation;

— Poor coordination and referral between different service providers;

— Red tape - One study found that approximately half of all applicants for the Aid to Families With Dependent Children/Medicaid programs, nationally, were denied eligibility because they were unable to comply with procedural requirements within the time allowed;[86]

— Inhospitable conditions at service sites, such as overcrowded and rundown waiting rooms, long waiting times, and unfriendly staff;

— Cultural factors, such as a lack of cultural sensitivity and competency in meeting the needs of clients who come from other cultures and may not speak English; and

— Fear of health care facilities and/or going to the doctor, especially on the part of teenagers and some clients who are poor or from other countries.

Finances are considered by many to be the most significant of these barriers. In an attempt to address this problem, in recent years Congress has greatly expanded eligibility for Medicaid for pregnant women, infants, and children.[h]

Today, federal law requires states to provide coverage to pregnant women and children under age 6 who were born after September 30, 1983, in families with incomes below 133 percent of the federal poverty level ($11,570 for a family of three in 1992). States have the option of covering pregnant women and infants with family incomes up to 185 percent of poverty. In addition, states are required to extend Medicaid eligibility, on a phased-in basis, to all children under age 19 with family incomes below poverty. By the year 2002 all poor children under age 19 will be covered.[70]

These expansions have galvanized states' efforts to improve the health of pregnant women and children. Many have gone even further than the federal requirements. As of July 1, 1991, 29 states had expanded coverage beyond 133 percent of the federal poverty level for pregnant women and infants. Many states, including California, Minnesota, Vermont and Washington also provide financial access for children beyond Medicaid through state-funded programs.[64]

The Medicaid program has also been expanded in a number of other ways to increase access for pregnant women and children[64]:

1. As of July 1991, 26 states granted pregnant women "presumptive eligibility". This allows them to receive temporary eligibility for Medicaid and obtain prenatal care while their applications are being processed.

2. Many states have streamlined eligibility in other ways, such as dropping asset tests (48), shortening application forms (31), and expediting the eligibility determination process (14).

3. All states are required to offer continuous eligibility throughout pregnancy and the 60 day postpartum period for the mother and for the first year of life for the infant.

4. States are beginning to "outstation" Medicaid eligibility workers in public health clinics, federally qualified health centers and certain hospitals so that it is more convenient for women and children to apply. Fourteen states even allow mail-in applications for Medicaid.

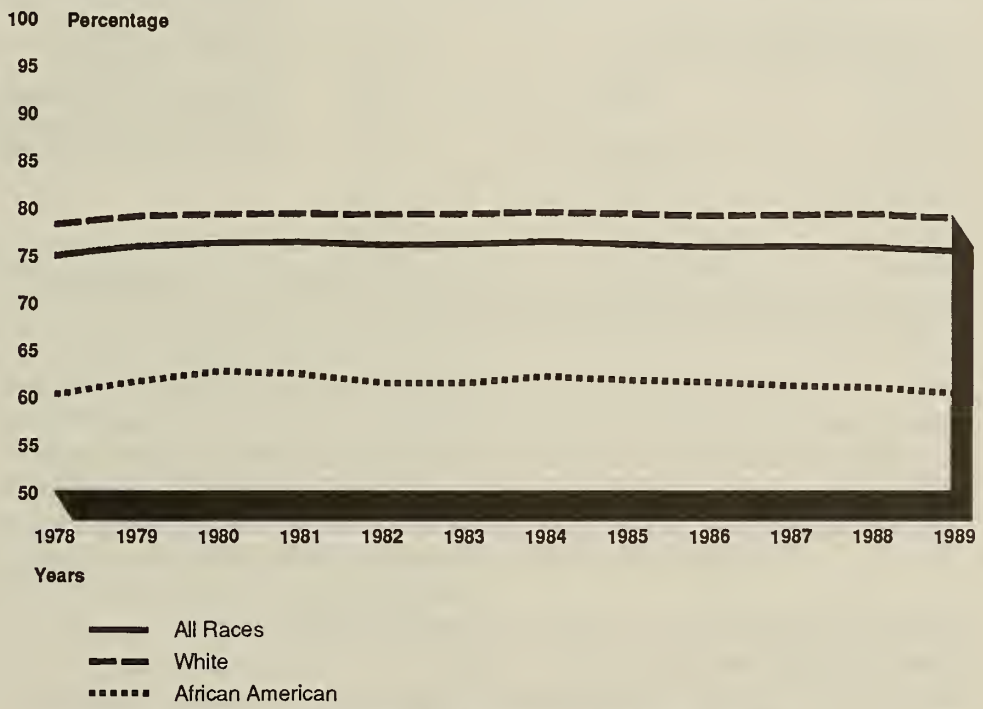
5. Requirements in the Early and Periodic Screening, Diagnosis, and Treatment Program have been strengthened, with the goal that enrolled children will receive the full range of services they need.

State maternal and child health agencies, often in collaboration with Medicaid programs, have also been actively working to assure more pregnant women and children receive needed services. They have established toll-free hotlines and have begun to encourage one-stop shopping and home visiting programs.

Even with these expansions and improvements, 8.5 million women of childbearing age and 9.8 million children still do not qualify for Medicaid or have private insurance coverage. In addition, a significant number of women with private insurance have policies which do not cover maternity and delivery costs. And the non-financial barriers continue to plague women and children.

Evidence of all these barriers can be seen in the trends of utilization of prenatal care. During the last 10 years the percentage of pregnant women beginning care in the first trimester has not improved. In fact, the 1989 rate of 75.5 percent was a decrease from the 1979 rate of 75.9 percent. (See Figure 4.1.) In contrast, the national objective for the year 2000 for early prenatal care is 90 percent. Given the direction of this trend, it is unlikely we will reach this goal.

Figure 4.1 – Percentage of Women Receiving Early Prenatal Care, by Race, 1978–1989



Source: National Center for Health Statistics, *Vital Statistics of the United States*

Prenatal Care Among Different Populations and Age Groups

Whites, African Americans and Hispanics

The rates of early prenatal care for both white and African American women in 1989 were the worst in 10 years.[61] (Trend data are not available for Hispanic women.) Except for Cubans, the 1989 rates of early prenatal care for Hispanics were worse than both the white rate and the national average. The reasons for this include the difficulties these groups face in overcoming the barriers to care discussed earlier. (See Table 4.1.)

Table 4.1 – Rates of Early Prenatal Care Among Whites, African Americans and Hispanics, 1989

Racial/Ethnic Group	Rate
Cuban	83.2%
White	78.9%
(All Combined)	**75.5%**
Other Hispanic Groups	66.0%
Puerto Rican	62.7%
Central and South American	60.8%
African American	59.9%
Mexican American	56.7%

Source: National Center for Health Statistics, "Advance Report of Final Natality Statistics, 1989"

Asian Americans, American Indians and Alaska Natives

The most recent data for Asian Americans, American Indians and Alaska Natives are from 1988. As with other minority groups, rates for some of these groups are worse than the national average and the rate for whites. Their rates reflect problems many of them face in breaking through the barriers to care discussed earlier. In addition, the health beliefs of many Asian immigrants impact on their utilization of prenatal care. For instance, many recent Southeast Asian immigrants view pregnancy as a normal state and, therefore, do not see the need to visit a health care provider for prenatal care. (See Table 4.2)

Adolescents

Rates of early prenatal care vary considerably across age groups (See Table 4.3). Not unexpectedly, the percentage of teens who received early care in 1989 was lower than that of older women. This is largely due to the fact that teens are more likely to deny they are pregnant, and less likely to know the importance of early prenatal care, or how and where to obtain it.

Table 4.2 – Rates of Early Prenatal Care Among Asian Americans, American Indians and Alaska Natives, 1988

Racial/Ethnic Group	Rate
Japanese	87.0%
Chinese	82.2%
(White)	**79.4%**
Filipino	78.6%
(All Combined)	**75.9%**
Other Asians	72.7%
Hawaiians	69.5%
American Indian/Alaska Native	60.6%

Source: Source: National Center for Health Statistics, *Health, United States, 1990*

Table 4.3 – Percentage of Women Receiving Early Prenatal Care, by Age and Race, 1989

White		African American	
Age	**Rate**	**Age**	**Rate**
below 15	39.9%	below 15	35.5%
15-19	56.9%	15-19	47.5%
20 and older	81.6%	20 and older	64.4%

Source: National Center for Health Statistics, "Advance Report of Final Natality Statistics, 1989"

Recommendations

1. All pregnant women and children must be guaranteed access to comprehensive prenatal and primary health care services. Strategies to overcome the administrative and cultural barriers to care must be developed on the national and community levels. The financial barriers must be addressed at the federal, state and local levels.

2. Efforts must be made to coordinate health, social, nutrition, and other programs for mothers and children. Such strategies should include one-stop shopping, which provides a single point of entry into the health and social service systems through any health or social service provider.

3. Outreach to high risk groups must be greatly increased. Strategies for these programs must be developed on the local level and supported at higher levels of government. Such strategies should include public awareness campaigns and home visiting programs.

Chapter Five

Epidemics of Preventable Childhood Diseases Have Reappeared

In Brief ....

- In 1991 UNICEF declared success in attaining a worldwide average immunization rate of 80 percent. Until the 1980s the immunization of young children was also one of this nation's greatest public health accomplishments. However, by the late 1980s our immunization levels had fallen off and the United States began to experience new epidemics of immunization preventable diseases.

- In 1989 more than 18,000 cases of measles and 41 deaths were reported, the highest number since 1978. This skyrocketed to 25,000 cases and over 60 deaths in 1990.[65] The increase in measles cases was greatest among unvaccinated African American and Hispanic preschool-aged children who lived in poor areas of large cities.[53]

- Eighty percent of the cases among children 16 months to 5 years of age could have been prevented with timely immunizations. However, half of the children in low income, inner city neighborhoods do not receive measles vaccinations by their second birthday.[65]

- Most private insurance policies do not include coverage for preventive care, which includes immunizations. As a result, many families use publicly funded vaccination programs or must pay as much as $303 out of their own pocket and, therefore, many often postpone their children's immunizations.[32, 46, 65]

- Although federal funds for immunizations have increased in the past few years, funding has not kept pace with increased costs or children's needs. Nationwide, 61 percent of Community Health Centers (a primary source of health care for the poor) have experienced vaccine shortages.[78]

The Problem

This nation's tremendous success in immunizing children against many serious childhood diseases including polio, measles, mumps, rubella and pertussis (whooping cough) was, until the late 1980s, one of our greatest public health accomplishments, and led to their virtual elimination. Between 1952 and 1984 the number of cases of polio dropped from 57,000 to four. The incidence of pertussis fell from more than 265,000 cases with 7,500 deaths in 1934 to fewer than 2,000 with four deaths in 1982.[88]

However, in the late 1980s signs began to appear that we were failing to ensure that all children received needed immunizations. In 1989, more than 18,000 cases of measles and 41 deaths were reported, the highest number since 1978. This skyrocketed to 25,000 cases and over 60 deaths in 1990. The increase in measles cases was greatest among unvaccinated African American and Hispanic preschool-aged children who lived in poor neighborhoods of large cities. Almost half of the cases reported in 1990 were among this age group. At the same time, we also experienced outbreaks of other immunization preventable diseases, including mumps and pertussis.

Especially tragic is the fact that over 80 percent of the measles cases among children 16 months to 5 years of age could have been prevented with timely immunizations. However, as many as half of the children living in low income, inner city neighborhoods had not received measles vaccinations by their second birthday.[65]

Our failure in this area is particularly embarrassing and unacceptable given the United States' earlier success in eradicating diseases such as polio and the recent success by UNICEF in immunizing children around the world. In 1991 UNICEF declared international success in obtaining an 80 percent average immunization rate for the world's children under age 2.

These epidemics are symptomatic of many breakdowns in our health care and other service delivery systems. Most importantly, many children, especially the poor, do not have a "medical home", a physician or nurse practitioner from whom they receive ongoing primary care. Because measles is the most contagious of the immunization preventable diseases, it serves as an early warning that a significant number of children are not receiving needed preventive pediatric services, which include immunizations.

A number of factors related to the ineffectiveness of our health care delivery system have been identified as contributing to these epidemics. These same factors are also recognized as barriers to preventive pediatric services, in general, and include the following:

— Lack of awareness: Many parents are not aware of the importance of immunizations or other preventive services, or when and how to obtain them.[65]

— Cost: Medicaid covers immunizations for those enrolled. However, not all states choose to cover them.[46] Additionally, most private insurance policies do not include coverage for preventive care or immunizations. Therefore, many low and moderate-income families either postpone their

children's immunizations, which can cost more than $303,[32] or take them to public clinics where they can obtain vaccinations at reduced prices or for free. Because funding for public immunization programs has not kept pace with increased costs, this increased service population is placing a strain on the already short supply of vaccines available through public programs.[65] A recent survey found that 61 percent of community health centers had experienced vaccine shortages.[78]

— Inefficient immunization record keeping systems which inhibit the ability of clinics to track or notify families when vaccinations are due.[65]

— Fear among some parents that their child will contract the disease from the vaccination keeps them from bringing their child in for immunizations. While this is possible in very rare cases, it is much more likely that the child will develop the disease if he/she is not immunized.

A recent national survey identified several other factors that have contributed to inadequate vaccination coverage. These include:[65]

- immunizations being available by appointment only,
- requirements for a physical exam before immunization,
- the need for a physician's referral in order to be vaccinated in a public clinic,
- requirements for enrollment in well-baby clinics in order to be immunized,
- administrative fees,
- insufficient clinic personnel,
- inadequate clinic hours, and
- too few clinic locations.

Many of these barriers could be resolved by assuring that all children have a medical home, a primary health care provider. Some could be addressed on the local level, while others may require financial and other technical assistance from federal and/or state governments. The seriousness of this epidemic has been recognized by the United States Congress which greatly increased federal funding for the childhood immunization program to $297.8 million for fiscal year 1992. However, this funding still falls short of what is necessary to reach all in need.

Many public health departments and clinics also have responded to this epidemic with programs designed to quickly vaccinate large numbers of children. These activities include mobile vans which go into neighborhoods where large numbers of unvaccinated children live, expansion of clinic hours, and prioritizing appointments for vaccinations. However, these efforts are stop-gap and do not address the causes of this epidemic.

The Public Health Service's year 2000 objectives call for 90 percent of all children below the age of 2 to be fully immunized, as compared to the baseline of 70-80 percent in 1989. They have also set a target of 90 percent for the percentage of babies aged 18 months and younger who should receive recommended primary care services, which include immunizations, at appropriate intervals. If we are to reach these goals we must act quickly.

Recommendations[i]

1. All children must be guaranteed universal access to primary and preventive health care services. Achieving this goal demands special initiatives to assure that all eligible children receive services through the Medicaid EPSDT program, changes in private insurance policies, and efforts to eliminate additional nonfinancial barriers to care.

2. Immunization services could be improved by strengthening coordination and referral systems between health and related service providers.

3. The federally-funded bulk vaccine purchasing program administered by the Centers for Disease Control must be further expanded to assure that an adequate supply of vaccine is available to public health departments and clinics, and community and migrant health centers.

4. Existing Medicaid regulations which require reimbursement for all recommended immunizations provided to enrollees must be enforced by the Department of Health and Human Service and the states.

5. A national vaccine registry which is part of the national vital records system should be established.

6. Community-based public awareness campaigns regarding the need for and how to obtain immunizations must redouble their efforts. Federal, state and local governments, as well as foundations, should increase support for these efforts.

Conclusion

This country will have to work harder if we are to reach the national infant mortality and maternal and child health goals established for the year 2000. These goals are attainable, as the data from many other nations show, and crucial to our nation's future. The United States' poor international standing indicates that we have not made the same commitment to our children as have other industrialized nations. Our lack of attention is also evidenced by the fact that progress on many of these maternal and child health indicators has not only stagnated, but declined. If we hope to come even close to these goals, our first order of business must be to make the health and well-being of pregnant women and children a national priority.

In addition to committing additional financial resources, we also must increase and apply our knowledge about the needs of high-risk groups and become more competent in developing and delivering services appropriate to them. The financial, administrative and cultural barriers to care must be reduced. We know what to do and we must act on our knowledge.

However, these changes cannot be accomplished in a vacuum. In order for our efforts to be effective, a national consensus must be reached about the importance of these issues, acknowledgement of the cost-effectiveness of investing in prevention, and a national commitment to making the needed resources available.

We can no longer afford to rely on high-technology interventions. We must truly reexamine our approach. We must reorient ourselves from crisis intervention to prevention.

We must act now. Policymakers, business leaders, religious groups, communities, and families can, and must, make the difference. Prompt and sustained action is needed to meet these challenges, so we do not short-change our next generation.

End Notes

a. The National Institute on Alcohol Abuse and Alcoholism has defined "heavy drinking" as an average of 1 ounce or more of alcohol per day (two drinks or more).[99]

b. Baseline data were not available at the time this report went to press.

c. Early prenatal care is care which begins in the first trimester of pregnancy, the first three months.

d. A number of bills which would expand Medicaid coverage for alcohol and drug treatment are currently pending before the United States Congress. These include the Medicaid Substance Abuse Treatment Act of 1991, S. 1677; the Medicaid Drug Treatment for Families Act of 1991, S. 29; The Child Welfare and Prevention Services Act, S. 4; and the Medicaid Substance Abuse Treatment Act of 1991, H.R. 1189.

e. The perinatal period is during late pregnancy and delivery.

f. The Hispanic population is made up of both white and black Hispanics. Non-Hispanic blacks are all blacks that are not Hispanic. Likewise, non-Hispanic whites are all whites who are not Hispanic.

g. These recommendations are adopted from the National Commission on Acquired Immune Deficiency Syndrome, *America Living With AIDS*.

h. Funds for Medicaid are provided by federal and state governments on a matching basis, according to a formula, with the federal contribution varying from state to state. Medicaid is an entitlement program, meaning that all who meet the eligibility guidelines, established by each state within the parameters set by the federal government, are entitled to services under the program.

i. These recommendations are adopted from reports by the National Vaccine Advisory Committee; Kay Johnson, "Proposal for a National Vaccine Registry"; Alan Hinman, "What Will It Take to Fully Protect All American Children With Vaccines?"; Sara Rosenbaum, *Vaccine Supply and Low Income Children: Barriers Faced by Community and Migrant Health Center Patients*; and Joseph Liu and Sara Rosenbaum, *Medicaid and Childhood Immunizations: A National Study*.

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The National Commission to Prevent Infant Mortality

The National Commission to Prevent Infant Mortality was established by Congress in 1987 to create a national strategic plan to reduce infant mortality and morbidity in the United States. The sixteen-member Commission includes Members of Congress, the Secretary of Health and Human Services, the Comptroller General of the United States, representatives of state government, and experts in the field of maternal and child health.

Knowing that many, if not most, of the answers to how to promote the health of mothers and children have existed for decades, the Commission chose to focus on practical solutions at the federal, state, and local levels for improving the health and well-being of mothers and children, rather than create a new body of research.

In August 1988, the Commission presented its findings to the President and the Congress in the report, *Death Before Life: The Tragedy of Infant Mortality.* This report detailed a series of action steps which could be implemented by the public and private sectors.

The National Commission to Prevent Infant Mortality continues its work to create mechanisms for implementation of the recommendations contained in the above report. Current efforts focus on continuing to bring national attention and a strengthened momentum to activities which promote the health and well-being of mothers and children.

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